



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/731,622

12/09/2003

Michael Kowalchik

EMC-01-102CIP1

4760

24227 7590 03/21/2008
EMC CORPORATION
OFFICE OF THE GENERAL COUNSEL
176 SOUTH STREET
HOPKINTON, MA 01748

EXAMINER

PEIKARI, BEHZAD

ART UNIT

PAPER NUMBER

2189

MAIL DATE

DELIVERY MODE

03/21/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/731,622	Applicant(s) KOWALCHIK ET AL.	
	Examiner B. James Peikari	Art Unit 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-32,34-43,45 and 47-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-32,34-43,45 and 47-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Appeal

1. In view of the Supplemental Appeal Brief filed on July 17,2007, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below.

2. Applicant's request for reconsideration of the rejection in the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Drawings

3. The drawings are objected to because Figure 13 is informal. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The specification is objected to because:

(A) The status of applications 10/004,090 and 10/001,317 should be updated, i.e., "now U.S. Patent No. 7,174,422" and "now U.S. Patent No. 6,973,537", respectively.

(B) The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

(C) The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). The claims depend, in large part, upon the text of the preliminary amendment to the specification filed on December 9, 2003. However, nothing in the preliminary amendment or in the original specification discloses that a disk emulation system as well as an actual disk system may be combined in a single system, as in claim 43.

5. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 35, 36, 43, 47 and 48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

(A) With regard to claims 35, 36, 47 and 48, the disclosure does not explain how the various disk-emulating solid state memories added by the preliminary amendment of December 9, 2003 are able to function as a Redundant Array of Inexpensive Disks (RAID). Applicant states:

“In operation, the device 300 will operate in a manner similar to the device 106, as previously described with reference to Figs. 1-6. Furthermore, the device 300 may be used in a wide variety of systems and in a wide variety of different capacities, such as those previously described with reference to FIGs. 7-12.”

This language is insufficient to explain *how* this is achieved. If applicant believes the ability to operate as a RAID is obvious for disk-emulating solid state memories, then the specification should plainly state so. At present, however, no explanation has been given and no new, novel or unobvious technical description of how this has been achieved has been set forth.

(C) With regard to claim 43, (1) the original specification discloses a disk system using actual disks and (2) the preliminary amendment of December 9, 2003 discloses a disk-emulation system using solid state memory. However, nothing in the preliminary amendment or in the original specification discloses that a disk emulation system as well as an actual disk system may be *combined* in a single system.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 30-32, 34, 37-42, 45, 49 and 50 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Thomas, U.S. 5,359,726.

With regard to claim 1, for example, Thomas teaches a data storage device comprising: a device interface for receiving data access requests (*note input/output buffer 1*); a device housing conforming to a standard form factor (*note column 3, lines 54-61*); a plurality of non-volatile memory devices housed within the device housing, the plurality of non-volatile memory devices being selected from the group consisting of flash memory; compact flash memory; magnoresistive RAM; ferroelectric RAM; dynamic RAM and static RAM (*note the use of "FRAM packs", which are stacks of FRAM boards used to emulate disks, see column 3, lines 39-53*) being maintained as non-volatile (*note column 2, lines 4054, which states that the FRAM packs are non-volatile*) with the use of a power subsystem (*the power supply is not shown but clear reference is made to the fact that ferroelectric memories use power in column 3, lines 12-29*) and microelectromechanical memory devices (*supporting devices are shown in Figures 1 and 2*); and a controller that accesses the non-volatile memory devices in response to the received data access requests (*note the control devices of Figure 1*).

Independent claims 45, 47, 49 and 50 are rejected for reasons similar to those outlined above.

As for the dependent claims, Thomas clearly teaches the use of SCSI as well as a number of protocols that use serial and/or parallel connections, note column 3, line 63.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 35, 36, 43, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas, U.S. 5,359,726.

(A) With regard to claims 35, 36, 47 and 48, Thomas does not explicitly teach using the FRAM memories in a RAID system, however, it would have been obvious to one having ordinary skill in the art to do so because (1) RAID systems were a well known technique for balancing speed with fault-tolerance, where the balance was determined by the type of RAID used, to increase transfer efficiency and data security of data stored in disk memory and (2) the Thomas system was explicitly designed to use solid state memory (FRAM) in place of rotating disk drives – the “FRAM packs” of Thomas were designed to be used wherever disk memory was used -- and the entire Thomas disclosure provides a technical explanation of how such emulation may be achieved.

(B) With regard to claim 43, Thomas does not explicitly teach using the disk-emulation system in combination with an actual disk system. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to simply use both in one system, since the trade-off between disk memory and solid state memory (*note Thomas, column 2, lines 66 et seq.*) would never have to be made because such a combined system would have both types of memory.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Holzhammer et al., U.S., 5,630,093, and McKinley, U.S. 5,493,574, are particularly relevant to the claims to the extent that they may explicitly teach or suggest some or all of the claims. Both of these references teach using solid state memory devices to emulate disk memory and both teach SCSI interfaces. No additional rejections are deemed necessary at this time, however. Applicant is strongly encouraged to consider these references before formulating any response to this Office action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Peikari whose telephone number is (571) 272-4185. The examiner is generally available between 7:00 am and 7:30 pm, EST, Monday through Wednesday, and between 5:30 am and 4:00 pm on Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon, can be reached at (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center at 866-217-9197 (toll-free).

/B. James Peikari/
Primary Examiner, Art Unit 2189
3/27/2008

/Reginald G. Bragdon/
Supervisory Patent Examiner, Art Unit 2189